

**REMARKS**

This paper is being filed in further response to the Office Action dated June 25, 2004, and in view of the Notice dated January 4, 2005, that were issued in connection with the above-identified patent application. Applicants respectfully request reconsideration of the instant application in view of the amendments and remarks presented herein.

Claims 29, 30 and 36-48 were pending. Claims 29, 30, 44, 47 and 48 have been amended and new claims 49-67 added. No new matter has been added by these amendments. Therefore, upon entry of the instant amendment, claims 29-30, and 36-67 will be pending.

The amendments to claim 29 and 48 are fully supported by the application as filed at, for example, paragraphs [0015] and [0027] and, therefore, do not constitute new matter. The amendments to claims 44 and 47, which are changes in the representation of amino acid residue positions to provide clarification as requested by the Examiner, are fully supported by the original specification and claims.

An objection has been raised against the specification. In particular, the Examiner has alleged that the specification fails to provide sequence identifiers that correlate to the SEQ ID NOS as provided. In response, applicants have amended the specification and claims to insert appropriate SEQ ID NOS for all peptide chains. In addition, on January 6, 2005, Applicants mailed a Fifth Substitute Sequence Listing in paper and computer readable form. Support for the sequences listed in the Fifth Substitute Sequence Listing may be found in the specification as filed, *inter alia*, at paragraph [0018]. Therefore, the revised sequence listing does not constitute new matter, and further, the content of the paper and computer readable copies of the Substitute Sequence Listing, submitted in accordance with 37 C.F.R. § 1.821(c) and (e), were the same.

Applicants note with appreciation that the cited prior art of record has been deemed not to teach or suggest the presently claimed invention. In particular, applicants note that “Claim 29 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office Action.” Office Action at page 5. In this regard, the additional remarks below address the Examiner’s concerns.

**Claim 29 Is Definite**

Claims 29, 30 and 36-48 have been rejected under 35 U.S.C. §112, second paragraph as allegedly indefinite. The Examiner has alleged that claim 29 is vague and indefinite for reciting the terms “under conditions” and “sufficient time” in Claim 29 (c). Additionally, the Examiner alleges that Claim 29 is indefinite because it is unclear to where the cited antibody binds, as set forth in paragraph (d). Furthermore, it is alleged that Claim 29 is incomplete for omitting essential steps. The allegedly omitted steps are: a step of providing a labeled antibody or labeling the peptide or protein. Applicants respectfully traverse these rejections and assert that the alleged indefinite terms (*supra*) and antibody binding site are definite. Further claim 29, as amended herein, is not “incomplete.”

Applicants assert that it would have been clear to one of ordinary skill in the art that the phrases “under conditions” and “sufficient time” (Claim 29 (c)) are definite.

“If the claims, read in the light of the specification, reasonably apprise those skilled in the art both of the utilization and scope of the invention, and if the language is as precise as the subject matter permits, the courts can demand no more” (*Shatterproof Glass Cor. v Libbey-Woens Ford Co.*, 758 F.2d 613 624 (Fed. Cir. 1985) *citing Georgia Pacific Corp. v. United States Plywood Corp.*, 258 F.2d 124, 136 (2nd Cir. 1958).

To one of ordinary skill in the art, particularly with respect to the field of enzymology to which the instant application most closely relates, the phrases “under conditions” and “sufficient time” would have clearly indicated the acceptable variability in the assay conditions ordinarily encountered in the presently claimed invention. The specification, at Examples 1-6 (i.e., paragraphs [0042]-[0047]), describes “conditions” which reasonably apprise those of ordinary skill in the art both of the utilization and scope of the invention under 35 U.S.C. §112. Further, examples illustrating the assays of the present invention are explicitly set forth at paragraphs [0049]-[0072] and clearly demonstrate to one skilled in the art that the claimed matter is definite within the scope of the instant invention.

As to the rejection of Claim 29 under 35 U.S.C. §112, second paragraph, in which it is allegedly unclear to where the cited antibody binds, applicants respectfully disagree. The specification clearly states the nature and specificity of the cited antibody as utilized in the instant invention. At paragraph [0004] of the specification, an example is cited wherein “recognition is dependent on two criteria: 1) MKK7-dependent phosphorylation of threonine and 2) phosphorylation of the tyrosine amino acid residue.” Similarly, at paragraph [0009] the specification states that the term “bis- or double-phosphorylated” indicates a protein or peptide comprising the sequence motif Z-X-Y or Y-X-Z is phosphorylated at both Z and Y positions. Instant claim 29 (d) cites “adding an antibody having specificity to the kinase substrate peptide or protein which is phosphorylated at the **Y and Z** positions” (emphasis added). Therefore, while the antibody might bind to a phosphorylated threonine or serine residue, binding will only occur in the defined context of a phosphorylated Y position.

The Examiner has cited, however, the instant specification at page 10, paragraph [0024], which recites: “the antibody specifically recognizes a phosphorylated threonine or serine

residue at the Z position....” in support of the rejection based on indefiniteness. This citation is presented out of context since the specification unambiguously states that the antibody has a specificity to the bis- or double-phosphorylated of the kinase reaction (*see, e.g.*, paragraph [0013]) and (*supra*). Thus, this description makes perfectly clear to persons of ordinary skill in the art that antibody recognition specificity is for a substrate of the dual specificity kinases claimed in instant application. Accordingly, applicants assert that Claim 29 (d) is not indefinite, and respectfully request withdrawal of the rejection of Claim 29 based on indefiniteness under 35 U.S.C. §112, second paragraph.

Claim 29 also has been rejected under 35 U.S.C. §112, second paragraph as allegedly incomplete for omitting essential steps as defined at MPEP §2172.01 (“A claim which omits matter disclosed to be essential to the invention as described in the specification or in other statements of record may be rejected under U.S.C. 112, first paragraph as not enabling.”). In response, applicants have amended claim 29 to traverse the rejection in the interest of timely allowance. Claim 29 has been amended to recite “wherein the kinase substrate may be a labeled or unlabeled compound,” (claim 29 (c)), and recite “wherein the antibody may be a labeled or unlabeled antibody,” (claim 29(d)). Additionally, claim 29 as amended herein states that “wherein altered threonine or serine kinase activity, detected by either labeled antibody or labeled kinase substrate, in the presence of the test compound relative to threonine or serine kinase activity in the absence of the test compound indicates a modulator of threonine or serine kinase activity.” Accordingly, applicants assert that claim 29, as amended herein, is definite, not incomplete, and is fully enabled, and respectfully request withdrawal of the rejections of Claim 29 under 35 U.S.C. §112.

**Claim 48 Complies With The Written Description Requirement**

Claim 48 is rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The Examiner has alleged that the applicants do not disclose the “test compound with the threonine or serine kinase activity.” Further, the Examiner alleges that there is no description in the specification or originally filed claims disclosing the “test compound with the threonine or serine kinase activity.” Applicants respectfully disagree and contend that the specification clearly provide descriptions in such a way as to reasonably convey to one skilled in the relevant art that the inventors had possession of the claimed invention.

The Examiner’s attention is drawn to several occurrences in the specification which provide clear description of a compound with threonine or serine kinase activity, and tested in a manner claimed in instant application. For example, paragraphs [0044] to [0047] cite utilization, and provide examples, of MKK7 kinase under various parameters of testing including competitive peptide binding, ATP concentration and use of a specific inhibitory compound. As such, applicants assert that the specification would have enabled a person ordinarily skilled in the art at the time of filing to performed the claimed immunoassays by substituting test compounds of unknown activity in place of MKK7, the “test compound” example provided in the specification. It is further noted that, by definition, a test compound will comprise an unknown entity whose activity is to be determined as set forth in instant invention. Therefore, applicants have met their burden of proof that they possessed the claimed invention -- an assay system for an unknown test compound -- as evidenced by these examples of the instant specification. Accordingly, applicants respectfully request that the rejection of claim 48 under 35 U.S.C. §112, first paragraph be withdrawn.

**Claim 48 Is Definite**

Claim 48 is rejected under 35 U.S.C. §112, second paragraph as allegedly indefinite. Claim 48 is directed to immunoassays for screening modulators of threonine kinase activity and comprises the same method steps as claim 29. Indeed, Claim 48 stands rejected for the same reasons cited by the Examiner with respect to Claim 29. Applicants traverse these rejections and, for the reasons stated above, assert that the allegedly indefinite terms and the antibody binding site are definite. Further, applicants assert that claim 48, as amended herein, is not incomplete and is fully enabled.

Claim 48(f) is found to be vague and indefinite due to recitation of the term “substantially”. Applicants traverse this rejection and assert that claim 48(f), as amended herein, is definite. Applicants have amended claim 48(f) to recite: “wherein altered threonine or serine kinase activity, detected by either labeled antibody or labeled kinase substrate, in the presence of the test compound as relative to the threonine or serine kinase activity in the presence of the known modulator indicates a modulator of threonine or serine kinase activity.” As such, applicants assert that claim 48(f), as amended herein, is definite and respectfully request withdrawal of the rejections of Claim 48 under 35 U.S.C. § 112, second paragraph.

Accordingly, applicants respectfully request the withdrawal of the rejection of Claim 48 under 35 U.S.C. §112.

**Claims 40 and 43 Are Definite**

Claims 40 and 43 have been rejected under 35 U.S.C. § 112, second paragraph as allegedly vague and indefinite. The Examiner alleges that the term “affinity ligand” lacks definition or guidance as provided for the term in the specification. Applicants respectfully

disagree with the Examiner and point out that the definition of an affinity ligand is provided within the instant specification. Claims 40 and 43 are therefore definite.

Specific reference to “affinity ligand” is made at paragraphs [0027], [0029] and [0037]. The reference to affinity ligand is made in the clear context of specific labeling systems such as a reporter enzyme. For persons of ordinary skill in the art, the phrase “affinity ligand” as used in this context would have clearly provided sufficient definition or guidance as to what is meant the phrase such that the claim would be fully understood. Accordingly, Applicants respectfully request the withdrawal of the rejections of Claims 40 and 43 under 35 U.S.C. §112, second paragraph.

#### **Claim 44 and 47 Are Definite**

The Examiner has rejected Claims 44 and 47 as allegedly being vague and indefinite due to an unclear indication by using a superscript character, exemplified by “Tyr<sup>5</sup>” etc., in the instant claims. Applicants respectfully traverse this rejection and assert that Claims 44 and 47, as amended herein, are not vague and indefinite.

Applicants note that the method of designating a specific position of an amino acid in a peptide chain by utilizing a superscript character is well known and common practice in the relevant art of the present invention. However, in the interest of expediting allowance of instant application, applicants have amended claims 44 and 47 to replace “Tyr<sup>5</sup>” by “Tyr at position 5” and, in addition, have made similar replacements in the claims to amend usage of the superscript character. Thus, it is clear in the pending claims that a specific amino acid residue at a particular location in a polypeptide or protein is being referenced. As such, applicants respectfully request withdrawal of the rejections of Claims 44 and 47 on grounds of being vague and indefinite under 35 U.S.C. § 112, second paragraph.

**Conclusion**

Applicants respectfully request reconsideration of the application and entry of the foregoing remarks into the file history of the above-identified application. Applicants believe that in light of the foregoing amendments and remarks, the claims are in condition for allowance, and accordingly, respectfully request withdrawal of the outstanding objections and rejections. An allowance is earnestly sought.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'P. Shen', written over a horizontal line.

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